

REMARKS

By the present amendment and response, independent claims 3 and 9 have been amended to overcome the Examiner's objections. Claims 3, 4, 9, and 12-14 are pending in the present application. Reconsideration and allowance of pending claims 3, 4, 9, and 12-14 in view of the following remarks are requested.

The Examiner has rejected claims 3, 4, 9, and 12-14 under 35 USC §103(a) as being unpatentable over U.S. patent number 5,894,146 to Pio et al. ("Pio") in view of U.S. patent number 5,712,501 to Davies et al. ("Davies"). For the reasons discussed below, Applicant respectfully submits that the present invention, as defined by amended independent claims 3 and 9, is patentably distinguishable over Pio and Davies, singly or in combination.

The present invention, as defined by amended independent claims 3 and 9, teaches, among other things, source and drain regions and a channel region formed in a well and a dopant concentration region displaced about a target region situated below the channel region, where the well has a first conductivity type and the source and drain regions and the dopant concentration region have a second conductivity type. As disclosed in the present application, the present invention provides a retrograde dopant distribution in the channel region between source and drain regions of a floating gate transistor, such as an NMOS transistor, where the retrograde dopant distribution has the same conductivity type as the source and drain regions. As a result, the present invention advantageously achieves reduced series resistance of series-connected floating gate transistors, which

allows a desired reduction in source/drain dopant levels in order to combat undesirable short channel effects.

In contrast to the present invention as defined by amended independent claims 3 and 9, Pio and Davies do not teach, disclose, or suggest source and drain regions and a channel region formed in a well and a dopant concentration region displaced about a target region situated below the channel region, where the well has a first conductivity type and the source and drain regions and the dopant concentration region have a second conductivity type. Pio specifically discloses floating gate transistor 2, selection transistor 3, source region 15, and drain region 16, where floating gate transistor 2 is connected in series with selection transistor 3. See, for example, column 5, lines 51-56 and Figure 8 of Pio. However, Pio fails to teach, disclose, or suggest a dopant concentration region displaced about a target region situated below a channel region of a floating gate transistor.

Davies specifically discloses graded-channel device 10 including doped region 18, which is formed in channel region 16 and is both vertically and laterally spaced apart from source region 13 and drain region 14. See, for example, column 3, lines 1-5 and Figure 1 of Davies. In Davies, source region 13 and drain region 14 have n-type conductivity, while doped region 18 has the same conductivity type as substrate 11, which has p-type conductivity. See, for example, Davies, column 2, lines 29-44 and column 3, lines 8-9. Thus, in Davies, doped region 18 has an opposite conductivity type as source region 13 and drain region 14. Furthermore, Davies does not teach, disclose, or suggest


source and drain regions and a channel region formed in a well and a dopant concentration region displaced about a target region situated below the channel region, where the well has a first conductivity type and the source and drain regions and the dopant concentration region have a second conductivity type.

For the foregoing reasons, Applicant respectfully submits that the present invention, as defined by amended independent claims 3 and 9, is not suggested, disclosed, or taught by Pio and Davies, either singly or in combination thereof. As such, the present invention, as defined by amended independent claims 3 and 9, is patentably distinguishable over Pio and Davies. Thus claim 4 depending from amended independent claim 3 and claims 12-14 depending from amended independent claim 9 are, *a fortiori*, also patentably distinguishable over Pio and Davies for at least the reasons presented above and also for additional limitations contained in each dependent claim.

Based on the foregoing reasons, the present invention, as defined by amended independent claims 3 and 9 and claims depending therefrom, is patentably distinguishable over the art cited by the Examiner. Thus, claims 3, 4, 9, and 12-14 pending in the present application are patentably distinguishable over the art cited by the Examiner. As such, and for all the foregoing reasons, an early allowance of claims 3, 4, 9, and 12-14 pending in the present application is respectfully requested.

Respectfully Submitted,
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